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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,319	02/27/2004	Frank Y. Xu	P121/MII-93-68-03	9202

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EXAMINER
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ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/789,319

**Applicant(s)**

XU ET AL.

**Examiner**

Marc S. Zimmer

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 20-28 is/are rejected.
- 7) ☒ Claim(s) 20-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/4/05, 1/14/05</u>   | 6) <input type="checkbox"/> Other: _____                                    |

### ***Information Disclosure Statement***

From MPEP 2004, "it is desirable to avoid the submission of long lists of documents if it can be avoided. Eliminate clearly irrelevant and marginally pertinent cumulative information. If a long list is submitted, highlight those documents which have been specifically brought to applicant's attention and/or are known to be of most significance. See *Penn Yan Boats, Inc. v. SeaLark Boats, Inc.*, 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972), *aff'd*, 479 F.2d 1338, 178 USPQ 577 (5th Cir. 1973), cert. denied, 414 U.S. 874 (1974). But cf. *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 33 USPQ2d 1823 (Fed. Cir. 1995). Virtually none of the hundreds of references furnished by Applicant taught an invention bearing any resemblance at all to that which is claimed

### ***Claim Objections***

The term "hexamethoxymethylmelamine" is misspelled in claim 15.

Claims 20-28 are objected to because it is not made clear in the third-to-last line of claim 20 what percentage is being predetermined. It is expected that the quantities are being chosen so as to provide a predetermined amount of silicon atoms by weight.

Insofar as claim 20 claims a material and claims 21-28 are dependent therefrom, these claims should also refer to a material as opposed to a composition.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 6 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It appears that Applicant relies on paragraph 34 of their Specification as support for these claims but that passage does not read in the same manner as do the claims. Indeed, the matching description in paragraph 34 is somewhat ambiguous and does not appear to suggest that siloxanes bearing all three of propyl groups, phenyl groups, and methyl groups simultaneously are contemplated. To the contrary, paragraph 34 seems to refer to mixtures of polysiloxane compounds separately containing methyl-, propyl-, and phenyl groups.

In the discussion of suitable polymers, Applicant recites Dow Corning® Z-6018 as a preferred embodiment of the polysiloxane component of the instant invention. Is this to say that Z-6018 has all three of the aforementioned groups? This seems to be a logical conclusion since, prior to mentioning this product, it is lamented that "organosiloxanes including methyl, phenyl, propyl, and their mixtures" are preferred. These structural attributes are not mentioned by the product data sheet for Z-6018 thus the Examiner is uncertain as to whether Applicant is volunteering this material as exemplary of those siloxane polymers having simultaneously methyl, propyl, and phenyl groups.

In any case, the Specification should be amended such that the descriptions of this component are consistent.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 and 20-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. At issue is the meaning of the entire portion of the claim beginning with "relative proportions.... established to reflow and vary a percentage of silicon atoms *in said composition upon said composition* and reflow when changing..."

First of all, as the Examiner understands the technology, whether or not a polymer exhibits "reflow", which is expected to simply mean flow, is not a consequence of the relative amounts/proportions of materials making up a polymer composition but, rather, whether the polymer has a glass transition temperature below its curing temperature ( $T_g$ ) so that, upon removal of the solvent, the polymer may still flow by heating it to its  $T_g$ . It is this behavior that will permit the practitioner to obtain a planarized surface because the polymer is capable of self-leveling until such time that it is sufficiently crosslinked that flow is no longer possible. Claim 1, on the other hand seems to imply that, in fact, reflow is a function of the amounts of materials in the coating composition. In the Examiner's estimation, judicious selection of the components of the composition and their proportions does nothing more than predetermine the silicon content (percentage of silicon atoms) realized upon removal of the solvent and reaction of the base polymer and crosslinking agent. (It is the

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Examiner's belief that the "changing between a liquid to a solid phase" merely alludes to the outcome of the solvent removal and reaction steps.)

Given the Examiner's interpretation of the claims, claim 1 would seem to claim nothing more than a silicone composition comprising a siloxane resin, crosslinking agent, catalyst, and solvent, where the materials provide some undefined amount of silicon as a fraction of all atoms in the final coating layer. If the ability of the polymer to "reflow" is given patentable weight, than the aforementioned "composition" would also have to have a glass transition temperature lower than the temperature at which it may be cured. The Examiner believes it odd to refer to a solvent containing composition by its glass transition temperature. Indeed, it is not clear how this parameter would even be measured in the presence of a solvent. The Examiner has enclosed a section taken from the text "Comprehensive Polymer Chemistry" authored by Allcock et al. where the measurement of  $T_g$  is discussed.

If it were to be assumed that the limitation is supposed to refer instead to the glass transition temperature of the base polymer, than this limitation would not seem to exclude a large majority of references insofar as the glass transition temperatures of many siloxane polymers, particularly linear polysiloxanes, is quite low with the range being  $-130^{\circ}\text{C}$  to  $-70^{\circ}\text{C}$ .

Also, there is not proper antecedent basis in claim 20 for the epoxy-functional silane recited in claim 21.

It is requested that Applicant consider the Examiner's interpretation and clarify any concepts that appear to be misunderstood.

### ***Claim Analysis***

The phrase "when changing between a liquid to a solid phase" is taken to refer to the transition that occurs when the polymer becomes crosslinked and the solvent is removed.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-4, 7-9, 11, 13-14, 20, and 22-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Fang et al., U.S. Patent Application Publication No. 2004/0202872. Fang et al. disclose a hydrophobic surface treatment composition comprising a polysiloxane bearing condensation-reactive groups, catalyst, and solvent. Regarding the crosslinking component, Fang et al. curiously state that their composition is *substantially free* of an external curing agent but defines the italicized phrase as meaning that there is less than 5 wt.% of that ingredient in paragraph 15. In paragraph 34, specific embodiments of the crosslinking agents are provided including aminoplasts and polyisocyanates. The polysiloxanes contemplated by Feng are outlined in

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paragraph 21 and include linear, branched, and cyclic polydimethylsiloxane, methyl-substituted siloxane ladder polymers (T-structured), polydiphenylsiloxane, etc.

Notably, where the polymer is comprised largely of dimethylsiloxane repeat units, the silicon content of the polymer is  $28.1/74.1 \approx 33$  wt.%. Further, because the polymer makes up the vast majority of the layer forming materials remaining upon crosslinking and drying (removing solvent), the silicon contribution to the total weight of the layer-forming material is about the same. On the other hand, when the polysiloxane is comprised largely of diphenylsiloxane units, the silicon content of the polymer is  $28.1/198.1 \approx 14.2$  wt.%. In this instance, the silicon contribution to the total weight of the layer-forming material will also be about 14.2 wt.%. Accordingly, claims 3, 4, 22, and 23 are anticipated.

As for claim 13, curing and solvent removal are performed at elevated temperature or room temperature according to paragraph 11.

As for claim 14, it is noted that this is a product-by-process claim. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Although Fang does not contemplate a centrifugation step, the "material" taught by the reference is, nonetheless, the same.



Claims 1, 3-4, 8, 13-14, 20, and 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Lockhart et al., U.S. Patent # 4,517,337. Lockhart discloses a curable silicone composition comprising each of materials (A) through (E) outlined in column 3, lines 49-59. Relevant to the present discussion, it is contemplated in column 5, lines 23-26 that hexamethoxymethylmelamine may be employed as an accelerator. It is not insignificant that this compound may also inherently function as a crosslinking agent given that silicones having similar structural attributes to those of the instant invention are disclosed for component (A).

Concerning claims 3, 4, 22, and 23, silanol-functionalized siloxane polymers (A) derived from dimethyl/diphenyl chlorosilanes or equilibration of octamethyl/octaphenyl cyclotetrasiloxanes are taught in column 6, lines 8-18. As before, polymer is comprised largely of dimethylsiloxane repeat units, the silicon content of the polymer is  $28.1/74.1 \approx 33$  wt.%. Further, because the polymer makes up the vast majority of the layer forming materials remaining upon crosslinking and drying (removing solvent), the silicon contribution to the total weight of the layer-forming material is about the same. On the other hand, when the polysiloxane is comprised largely of diphenylsiloxane units, the silicon content of the polymer is  $28.1/198.1 \approx 14.2$  wt.%. In this instance, the silicon contribution to the total weight of the layer-forming material will also be about 14.2 wt.%. Accordingly, claims 3, 4, 22, and 23 are anticipated.

Claims 13 and 14 are product-by-process claims where, again, the process is immaterial to patentability. Insofar as the product obtained upon vulcanization of the

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prior art composition will be the same as that realized by the methods set forth in claims 13 and 14, these claims are anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fang et al., U.S. Patent Application Publication No. 2004/020287 in view of Chang et al., U.S. Patent # 3,919,315. In view of (i) Applicant's usage of the descriptive term "about"; and (ii) the fact that the reference teaches in all cases fairly narrow ranges that encompass the specific amount set forth by Applicant (see paragraphs 15, 29, 32, and Example 1), the composition of claim 2 is obvious. "A prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a prima facie case of obviousness." *In re Peterson*, 315 F.3d 1325,1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003)

As for claim 8, Fang et al. incorporate by reference the teachings of Chang which is said to disclose crosslinking agents suited to their invention. In column 5, Chang contemplates using alkylated methylol melamine resins wherein the alkylating agent is methanol. This is simply another way of describing a compound also aptly named hexamethoxymelamine.

As for claims 10 and 26, toluenesulfonic acid is not expressly mentioned as a condensation catalyst. Nonetheless, one of ordinary skill will immediately appreciate that this compound is merely a functional equivalent of the acidic condensation catalysts mentioned in paragraph 31. "It is prima facie obvious to substitute equivalents, motivated by the reasonable expectation that the respective species will behave in a comparable manner or give comparable results in comparable circumstances." *In re Ruff* 118 USPQ 343; *In re Jezel* 158 USPQ 99; "the express suggestion to substitute one equivalent for another need not be present to render the substitution obvious." *In re Font*, 213 USPQ 532.

#### ***Allowable Subject Matter***

Claims 5, 12, 21, and 24-28 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Fang does not teach the incorporation of an epoxysilane nor is there anything specifically motivating one of ordinary skill to add this compound. Claims 15-19 are allowable.

Foster et al. U.S. Patent Application Publication No. 2004/0241338 discloses a conceptually similar method of preparing planarized microelectronic devices that exploits the same premise, i.e. use of a polymer having a curing temperature greater than its glass transition temperature though they add a "glass transition temperature suppression polymer" to the main coating polymer to bring the glass transition temperature into a range that permits flow prior the coating polymer be fully cured. One of the coating polymers of interest is a silsesquioxane polymer. See paragraph 26.

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However, while the coating polymer is disclosed as being curable, it is apparently self-curing, as there is no mention of a curing/crosslinking agent whatsoever.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 13, 2005

*Marc Zimmer*  
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AU 1712